AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A photonic crystal fibre comprising a bulk material having an arrangement of longitudinal holes and a guiding core, wherein the fibre has two-fold and at-most-two-fold rotational symmetry about a longitudinal axis of the fibre, wherein the ~~and as a result of that lack of~~ symmetry**[[,]]** of the fibre is arranged to render the fibre birefringent, in which the birefringence is such that light with a wavelength of 1.5 microns propagating in the fibre has a beat length of less than 1 cm, or if the fiber does not guide light at 1.5 microns, a beat length, at a guided wavelength, that scales up or down to a beat length ~~of less than 1 cm~~ at 1.5 microns.

2. (Original) A photonic crystal fibre as claimed in claim 1, in which the arrangement of holes is substantially periodic except for the presence of the core.

3. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the birefringence is such that light with a wavelength of 1.5 microns propagating in the fibre has a beat length of less than 5 mm.

Claim 4. (Canceled).

5. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the rotational symmetry is about an axis passing through the core.

6. (Currently Amended) A photonic crystal fibre as claimed in claim **[[1]]** 5, in which the core includes a hole.

7. (Original) A photonic crystal fibre as claimed in claim 6, in which the hole is filled with material other than air.

8. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the core does not include a hole.

9. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the arrangement of holes has at-most-two-fold rotational symmetry about an axis parallel to the longitudinal axis of the fibre.

10. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the arrangement of holes has higher-than-two-fold rotational symmetry about an axis parallel to the longitudinal axis of the fibre.

11. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the lack of higher rotational symmetry at least partly results from a variation, across the cross-section of the fibre, in the microstructure of the core.

12. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the lack of higher rotational symmetry at least partly results from a variation, across the cross-section of the fibre, in the diameter of the holes.

13. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the lack of higher rotational symmetry at least partly results from a variation, across the cross-section of the fibre, in the bulk material.

14. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the lack of higher rotational symmetry at least partly results from a variation, across the cross-section of the fibre, in the material contained in the holes.

15. (Previously Presented) A photonic crystal fibre as claimed in claim 1, in which the lack of higher rotational symmetry at least partly results from a variation, across the cross-section of the fibre, in the shape of the holes.

16. (Original) A photonic crystal fibre as claimed in claim 15, in which the shape variation is due to deformation resulting from stresses in the fibre as it is drawn.

17. (Currently Amended) A photonic crystal fibre ~~as claimed in claim 1,~~ comprising a bulk material having an arrangement of longitudinal holes and a guiding core, wherein the fibre has at-most-two-fold rotational symmetry about a longitudinal axis of the fibre, and as a result of the symmetry, the fibre is birefringent, in which the

lack of higher rotational symmetry results from a variation across the cross-section of the fibre, in one of the following in combination with one or more of the following or with a variation in another parameter: the microstructure of the core, the diameter of the holes, the bulk material, the material contained in the holes, and the shape of the holes.

18. (Currently Amended) ~~A photonic crystal fibre as claimed in claim 1~~, A photonic crystal fibre ~~as claimed in claim 1,~~ comprising a bulk material having an arrangement of longitudinal holes and a guiding core, wherein the fibre has at-most-two-fold rotational symmetry about a longitudinal axis of the fibre, and as a result of the symmetry, of the fibre is birefringent, in which the birefringent fibre has form birefringence.

19. (Currently Amended) A photonic crystal fibre ~~as claimed in claim 1,~~ comprising a bulk material having an arrangement of longitudinal holes and a guiding core, wherein the fibre has at-most-two-fold rotational symmetry about a longitudinal axis of the fibre, and as a result of the symmetry, of the fibre is birefringent, in which the birefringent fibre has stress birefringence.

20. (Currently Amended) A method of producing a birefringent photonic crystal fibre, the method comprising the following steps:

(a) forming a stack of canes, at least some of which are capillaries, the stack including canes arranged to form a core region in the fibre and canes arranged to form a cladding region in the fibre; and

(b) drawing the stack of canes into a birefringent fibre which has at-most-two-fold rotational symmetry about any longitudinal axis;

in which the stack of canes is arranged to have at-most-two-fold rotational symmetry about a longitudinal axis of the stack.

21. (Canceled).

22. (Previously Presented) A method as claimed in claim 20, in which the lack of higher rotational symmetry at least partly results from variations, across the cross-section of the stack, in the internal diameters of the capillaries.

23. (Previously Presented) A method as claimed in claim 20, in which the lack of higher rotational symmetry at least partly results from variations, across the cross-section of the stack, in the material of which the canes are made.

24. (Previously Presented) A method as claimed in claim 20, in which the lack of higher rotational symmetry at least partly results from variations, across the cross-section of the stack, in the material with which the capillaries are filled.

25. (Previously Presented) A method as claimed in claim 20, in which the lack of higher rotational symmetry at least partly results from variations, across the cross-section of the stack, in the external diameter of the canes.

26. (Previously Presented) A method as claimed in claim 20, in which canes are provided at the vertices of a cladding lattice which has at-most-two-fold rotational symmetry about the centre of the canes arranged to form the core.

27. (Currently Amended) A method as claimed in claim 20, in which capillaries of selected internal diameters are provided at the vertices of a cladding lattice which has at-most-two-fold rotational symmetry about the centre of the canes arranged to form the core, the selected internal diameters of the capillaries at the vertices of the cladding lattice being different from the internal diameters of the capillaries at other sites.

28. (Previously Presented) A method as claimed in claim 20, in which a substantial number of cladding canes, near to the canes arranged to form the core, are different from a substantial number of cladding canes, far from the canes arranged to form the core.

Claims 29-36. (Cancelled).

37. (Original) A method of producing a photonic crystal fibre, comprising:

(a) providing a plurality of elongate canes, each having a longitudinal axis, a first end and a second end, at least some of the canes being capillaries each having a hole parallel to the longitudinal axis of the cane and running from the first end of the cane to the second end of the cane;

(b) forming the canes into a stack, the canes being arranged with their longitudinal axes substantially parallel to each other and to the longitudinal axis of the stack;

(c) drawing the stack into a fibre whilst maintaining the hole of at least one capillary in communication with a source of fluid at a first pressure whilst maintaining the pressure around the capillary at a second pressure that is different from the first pressure, wherein the hole at the first pressure becomes, during the drawing process, a size different from that which it would have become without the pressure difference.

38. (Currently Amended) A method as claimed in claim **[[**27**]]** 37, in which a tube surrounds the stack of canes over at least a part of their length and the inside of the tube is maintained at the second pressure.

39. (Original) A method as claimed in claim 38, in which the tube restricts the expansion of at least one of the holes at the first internal pressure.

40. (Previously Presented). A method as claimed in claim 37, in which the tube does not undergo deformation significantly different from that which it would undergo without the pressure difference.

41. (Previously Presented) A method as claimed in claim 37, in which, during the drawing process: the tube is sealed near to the first end to a first end of an

evacuatable structure and the second end of the tube is within the evacuatable structure;

at least some of the capillaries pass through the evacuatable structure and are sealed to a second end thereof; and

the evacuatable structure is substantially evacuated in order to produce the second internal pressure.

42. (Original) A method as claimed in claim 41, in which the evacuatable structure is a metal tube.

43. (Previously Presented) A method as claimed in claim 37, in which the stack of canes has at-most-two-fold rotational symmetry about any of the longitudinal axes.

44. (New) A photonic crystal fibre comprising a bulk material having an arrangement of longitudinal holes and a guiding core, wherein the fibre has two-fold rotational symmetry about a longitudinal axis wherein the fiber has a sufficient short beat length to render the fibre birefringent.

45. (New) A photonic crystal fibre as claimed in claim 44, wherein the fiber has stress birefringence.

46. (New) A photonic crystal fibre comprising a bulk material having an arrangement of longitudinal holes and a guiding core, the fibre has two-fold rotational

symmetry about a longitudinal axis of the fibre wherein the two-fold rotational symmetry arrangement of the fibre render the fibre birefringent.

47. (New) A photonic crystal fibre as claimed in claim 46, wherein the fiber is obtained from a preform by including in the preform different capillaries at two fold symmetric pairs of lattice sites.

48. A photonic crystal fibre having a longitudinal axis circumscribed by a guiding core, which is surrounded by a cladding, the fiber comprises an arrangement of a plurality of longitudinal, parallel holes, wherein the fibre has two-fold and at-most-two-fold rotational symmetry about the longitudinal axis of the fibre wherein the symmetry of the fibre is arranged to render the fibre birefringent.

49. (New) A photonic crystal fibre as claimed in claim 48, wherein the symmetry of the fibre is arranged to render the fibre both stress birefringent and form birefringent.

50. (New) A method of producing a birefringent photonic crystal fibre, the method comprising the following steps:

(a) forming a stack of canes, at least some of which are capillaries, the stack including canes arranged to form a core region in the fibre and canes arranged to form a cladding region in the fibre; and

(b) drawing the stack of canes into a birefringent fibre which has at-most-two-fold rotational symmetry about any longitudinal axis,

in which the birefringence results at least partly from stresses formed within the fibre as it is drawn.

51. (New) A method as claimed in claim 50, in which a substantial number of cladding canes, near to the canes arranged to form the core, are different from a substantial number of cladding canes, far from the canes arranged to form the core.

52. (New) A method as claimed in claim 50, in which the stress is introduced by the inclusion, at sites having at-most-two-fold rotational symmetry, of a cane made from a different material from that of which at least some of the other canes in the lattice are made.

53. (New) A method as claimed in claim 50, in which the stress is introduced by the inclusion, at sites having at-most-two-fold rotational symmetry, of capillaries having a different capillary wall thickness from that of at least some of the other capillaries.

54. (New) A method as claimed in claim 50, in which the stresses result in the deformation of holes surrounding the core of the drawn fibre and that deformation results in birefringence.

55. (New) A method as claimed in claim 50, in which the stresses result in stresses in the core of the drawn fibre, and those stresses result in birefringence.

56. (New) A method as claimed in claim 50, in which the lack of rotational symmetry at least partly results from pressurization of at least one of the capillaries during the drawing of the stack.

57. (New) A method as claimed in claim 50, in which the lack of rotational symmetry at least partly results from evacuation of at least one of the capillaries during the drawing of the stack.

58. (New) A method as claimed in claim 50, in which the rotational symmetry of the stack of canes is two-fold rotational symmetry.

AMENDMENTS TO THE DRAWINGS:

The attached sheet of drawings includes changes to Figs. 1 and 4 These sheets, which includes Figs. 1-4, replaces the original sheets including Fig. 1-4.

Attachments: Replacement Sheet

Annotated Sheet Showing Changes